11-5855-246-10

TM 11-5855-246-10

TECHNICAL MANUAL

OPERATOR'S MANUAL

VIEWER, INFRARED AN/PAS-7

(NSN 5855-00-179-3169)

This copy is a reprint which includes current pages from Changes 1 through 3

HEADQUARTERS, DEPARTMENT OF THE ARMY

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READEX FICHE best copy available

TM 11-5855-246-10
C 1

CHANGE NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *19 June 1978*

Operator's Manual
VIEWER, INFRARED AN/PAS-7
(NSN 5855-00-179-3169)

TM 11–5855–246–10, 8 November 1976, is changed as follows:

Page 1–0. Replace Figure 1–1 with new Figure 1–1.

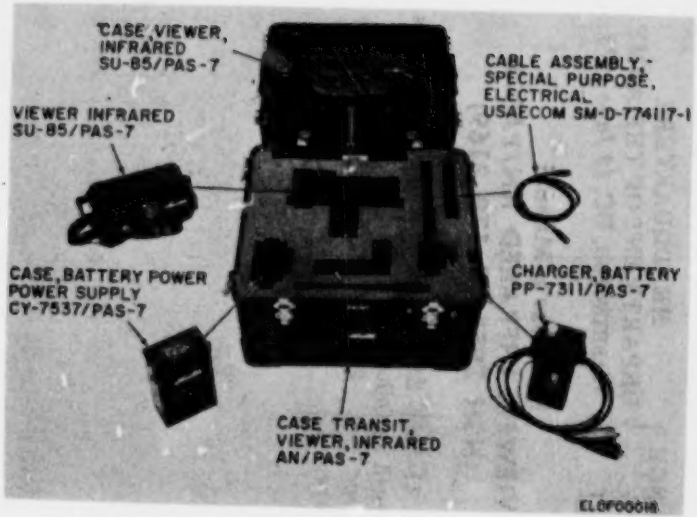
CASE, VIEWER, INFRARED SU-85/PAS-7
VIEWER INFRARED SU-85/PAS-7
CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL USAECOM SM-D-774117-1
CASE, BATTERY POWER POWER SUPPLY CY-7537/PAS-7
CHARGER, BATTERY PP-7311/PAS-7
CASE TRANSIT, VIEWER, INFRARED AN/PAS-7
ELOFOOOM

Figure 1–1. Viewer, Infrared AN/PAS–7.

Page 1–6. **Replace Figure 1–3 with new Figure 1–3.**

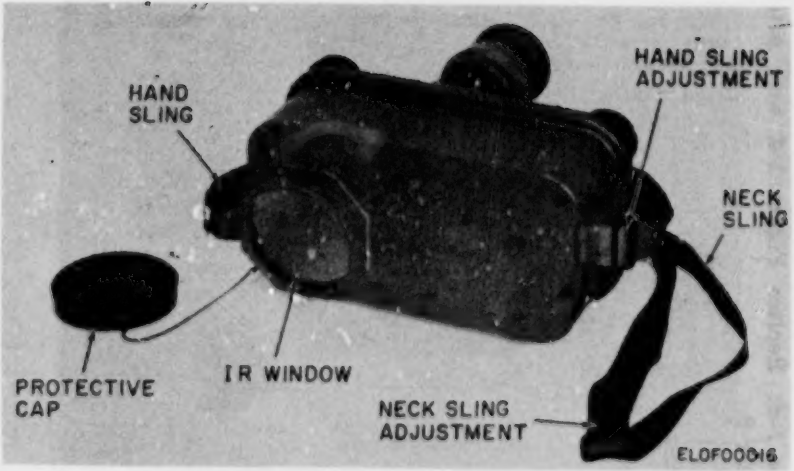

Figure 1–3. Viewer, Rear View.

Page 1–8. Paragraph 1–7*d*(2). In line 6, "sprnig-loaded" is changed to read "spring-loaded."

Page 1–12. Paragraph 1–8. The following information is added to the end of the tabulated data:

Dimensions (in.)

	Width	*Height*	*Depth*
Viewer	10	5-½	3-½
Battery	4-9/16	5-⅜	2-9/16
Charger	3-¼	8-¾	2-¼
Cable assembly		6 ft. long	

Weight (lb)

Viewer	6.5
Battery	4.0
Charger	2.5

Paragraphs 1–9 and 1–10 are rescinded.

Page 1–13. Table 1–1 is rescinded.

Page 1–14. Table 1-2 is rescinded.

Page 3–4. Table 3–1, Work time (T/H) column. For second item, "CHARGER" add "0.1."

Page 3–7. Paragraph 3.2, sixth line, last word. "downtown" is changed to read "down-time."

Page 3–10. Paragraph 3–4*a* is rescinded.

Pages B–1, B–2, and B–3. Appendix B is superseded as follows:

APPENDIX B
COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1. Scope

This appendix lists integral components of and basic issue items for the AN/PAS–7 to help you inventory items required for safe and efficient operation.

B-2. General

This Components of End Item List is divided into the following sections:

a. Section II. Integral Components of the End Item. Not applicable. These items, when assembled, comprise the AN/PAS–7 and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section III. Basic Issue Items. Not applicable.

B-3. Explanation of Columns

a. Illustration. This column is divided as follows:

(1) *Figure number.* Indicates the figure number of the illustration on which the item is shown.

(2) *Item number.* The number used to identify item called out in the illustration.

b. National Stock Number. Indicates the National stock number assigned to the item and which will be used for requisitioning.

c. Description. Indicates the Federal item name and, if required, a minimum description to identify the item. The part number indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. Following the part number, the Federal Supply Code for Manufacturers (FSCM) is shown in parentheses.

d. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

e. Usable on Code. Not applicable.

f. Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete major item.

g. Quantity. This column is left blank for use during an inventory. Under the Rcvd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item.

SECTION II INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
B-1	1	5855-01-020-3777	VIEWER, INFRARED SU-85/PAS-7			1		
B-1	2	6130-01-020-3776	CASE, BATTERY POWER SUPPLY CY-7537/PAS-7			1		
B-1	3	6130-01-020-4495	CHARGER, BATTERY PP-7311/PAS-7			1		
B-1	4	5995-01-040-9279	CABLE ASSEMBLY SM0774117-1			1		
B-1	5	5855-01-040-5879	CASE, VIEWER, INFRARED SM0774141-1			1		
B-1	6	5855-01-040-5878	CASE, TRANSIT SM0774139-1			1		

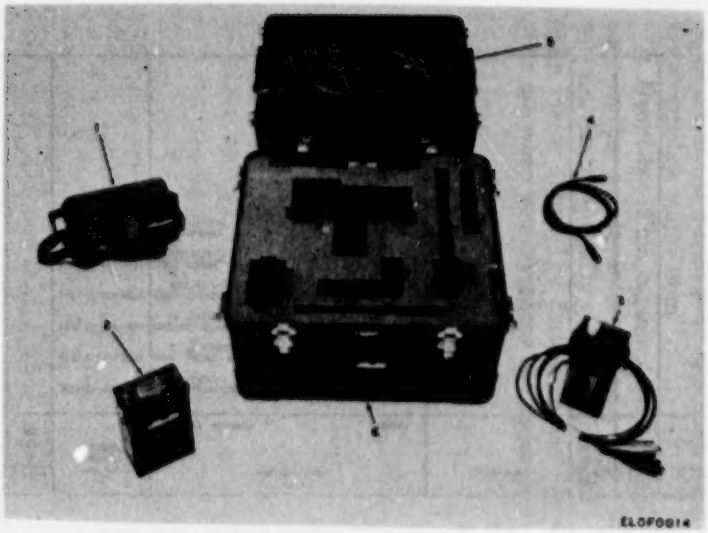

Figure B–1. Integral components of the end item

B–4. Add Appendix C after appendix B.

APPENDIX C

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

C-1. Scope

This appendix lists expendable supplies and materials you will need to operate and maintain the AN/PAS–7. These items are authorized to you by CTA 50–970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

C-2. Explanation of Columns

a. Column 1—Item Number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 5, app C").

b. Column 2—Level. This column identifies the lowest level of maintenance that requires the listed item.

C—Operator/Crew
O—Organizational Maintenance
F—Direct Support Maintenance
H—General Support Maintenance

c. Column 3—National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column 4—Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. Column 5—Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

SECTION II EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION PART NO. AND FSCM	(5) UNIT OF MEAS
1	C	7920-00-205-0565	CAMEL'S HAIR BRUSH	EA
2	C	6810-00-201-0906	LENS CLEANER	OZ
3	C	6640-00-507-6745	LENS TISSUE	OZ
4	C	8305-00-170-5060	LINT FREE CLOTH	EA

By Order of the Secretary of the Army:

BERNARD W. ROGERS
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Brigadier General, United States Army
The Adjutant General

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MDW (1)
Armies (2)
Corps (2)
Svc Colleges (1)
USASIGS (5)
USAADS (2)
USAFAS (2)
USAARMS (2)
USAIS (2)
USAES (2)
USAICS (3)
MAAG (1)
USARMIS (1)
USAERDAA (1)
USAERDAW (1)
Ft Gordon (10)
Ft Huachuca (10)
Ft Carson (5)
Ft Gillem (10)
Ft Richardson (CERCOM Ofc) (2)
Army Dep (1) except
LBAD (14)
SAAD (30)
SHAD (3)
TOAD (14)
USA Dep (1)
Sig Sec USA Dep (1)
Units Org Under Fol TOE:
(2 each)
29-207
29-610
(1 each)
7-15
29-15
29-25
29-35
29-134

ARNG: None

USAR: None

For explanation of abbreviations used, See AR 310-10

TM 11-5855-246-10
C 2

CHANGE No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *27 August 1979*

Operator's Manual

VIEWER, INFRARED AN/PAS-7
(NSN 5855-00-179-3169)

TM 11-5855-246-10, 8 November 1976, is changed as follows:

Page i. In "Reporting of Errors" block, change address to read: Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703.

Page 1-2. Paragraph 1-4 is superseded as follows:

1-4. Reporting Equipment Improvement Recommendations (EIR)

EIR's will be prepared using SF 368, Quality Deficiency Report. Instructions for preparing EIR's are provided in TM 38-750 (The Army Maintenance Management System). EIR's

should be mailed direct to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

Page 1-3. Following paragraph 1-6, add the following paragraph:

1-6.1. Hand Receipts

Use the hand receipts in TM 11-5855-246-10-HR for property accountability of Viewer, Infrared AN/PAS-7.

Page A-1. Add the following:

TM 11-5855-246-10-HR	Hand Receipt Manual Covering End Item/Components of End Item (COEI), Basic Issue Items (BII), and Additional Authorization List (AAL) for Viewer, Infrared AN/PAS-7 (NSN 5855-00-179-3169).

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

Distribution:

Active Army:

HISA (Ft Monmouth) (21)
USAINSCOM (2)
COE (1)
TSG (1)
USAARENBD (1)
DARCOM (1)
TRADOC (2)
OS Maj Cmd (4)
TECOM (2)
USACC (4)
MDW (1)
Armies (2)
Corps (2)
Svc Colleges (1)
USASIGS (5)
USAADS (2)
USAFAS (2)
USAARMS (2)
USAIS (2)
USAES (2)
USAICS (3)
MAAG (1)
USARMIS (1)
USAERDAA (1)
USAERDAW (1)
Ft Gordon (10)
Ft Huachuca (10)
Ft Carson (5)
Army Dep (1) except:
LBAD (14)
SAAD (30)
TOAD (14)
SHAD (3)

Ft Gillem (10)	29-610 (2)
USA Dep (1)	7-15 (1)
Sig Sec USA Dep (1)	29-15 (1)
Ft Richardson	29-25 (1)
(CERCOM Ofc) (2)	29-35 (1)
Units org under fol TOE:	29-134 (1)
29-207 (2)	

NG: None.

USAR: None.

For explanation of abbreviations used see AR 310-50.

Changes in force: C1 and C2

TM 11-5855-246-10
C 3

Change
No. 3

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, *26 May 1981*

Operator's Manual
VIEWER, INFRARED, AN/PAS-7A
(NSN 5855-01-093-3080)

TM 11-5855-246-10, 8 November 1976, is changed as follows: The title of the manual is changed as shown above.

The following warnings are added to the inside front cover.

WARNING

Breakage of the cathode-ray tube (CRT) causes a high velocity scattering of glass fragments (implosion). To prevent CRT implosion, avoid rough handling or jarring of the instrument. Handling of the CRT shall be done only by qualified maintenance personnel using approved safety mask and gloves.

WARNING

The infrared window is coated with thorium flouride which contains a radioactive isotope, Thorium-232. The only potential hazard

involves ingestion (swallowing or inhaling) of this coated material. This coating is electrodeposited in the silicone base so cleaning with alcohol will not damage it, but it will not be machined or worked on with abrasives of any sort. Dispose of broken windows in accordance with AR 755–15.

WARNING

Lithium organic batteries or cells are used in this equipment. They are potentially hazardous if misused or tampered with before, during, or after discharge. The following precautions must be strictly observed to prevent possible injury to personnel or equipment damage:

- *DO NOT* heat, incinerate, crush, puncture, disassemble, or otherwise mutilate the batteries.
- *DO NOT* shortcircuit, recharge, or bypass internal fuse.
- *DO NOT* store in equipment during long period of non-use in excess of 30 days.
- *TURN OFF* the equipment immediately if you detect battery compartment becoming unduly hot, hear battery cells venting (hissing sound), or smell irritating sulphur dioxide gas. Remove and dispose of the battery only after it is cool (30-60 minutes).

Page i. Reporting of Errors is superseded as follows:

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), to: Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703.

In either case, a reply will be furnished direct to you.

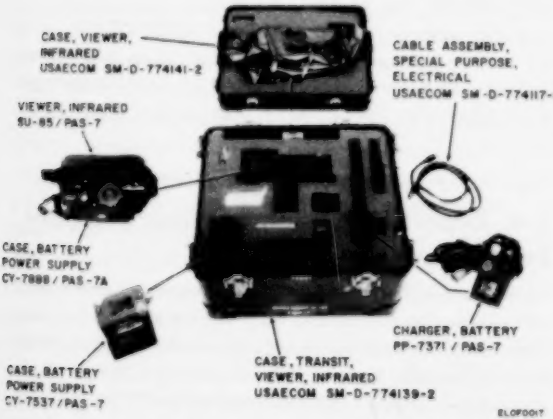
CASE, VIEWER, INFRARED USAECOM SM-D-774141-2
CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL USAECOM SM-D-774117-1
VIEWER, INFRARED SU-65/PAS-7
CASE, BATTERY POWER SUPPLY CY-7898/PAS-7A
CHARGER, BATTERY PP-7371/PAS-7
CASE, BATTERY POWER SUPPLY CY-7537/PAS-7
CASE, TRANSIT, VIEWER, INFRARED USAECOM SM-D-774139-2
ELOPOO17

Figure 1-1.1. Viewer, Infrared AN/PAS-7A.

Page 1-1. Paragraph 1-1. Add "or AN/PAS-7A (fig. 1-1.1)" at the end of the sentence.

Page 1-1. Paragraph 1-3 is superseded as follows:

1-3. Maintenance Forms, Records and Reports

a. *Reports of Maintenance and Unsatisfactory Equipment.* Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System.

b. *Report of Item and Packaging Discrepancies.* Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73/AFR 400-54/MCO 4430.3E.

c. *Discrepancy in Shipment Report (DISREP) (SF 361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4500.15.

Page 1-2. Paragraph 1-4 is superseded as follows:

1-4. Reporting Equipment Improvement Recommendations (EIR)

If your Viewer, Infrared AN/PAS-7A needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

Page 1-3. Paragraph 1-7 is superseded as follows:

1-7. Description of AN/PAS-7A

Viewer Infrared AN/PAS-7A (fig. 1-1.1) provides a means of nighttime observation by using only the infrared radiation emitted by the object observed. The equipment is used for observation and target selection. Although primarily a night vision device the AN/PAS-7A may also be used for daylight operation. The AN/PAS-7A is identical to the AN/PAS-7 with the addition of Case, Battery Power Supply CY-7888/PAS-7A (c below) and changes in minor components as described later (e below). If a more detailed description of any component of the AN/PAS-7A is needed, see your supervisor.

a. *Viewer, Infrared SU-85/PAS-7.* Viewer, Infrared SU-85/PAS-7 (viewer) (fig. 1-2 and 1-3) is the handheld portion of the AN/PAS-7A. The viewer housing is sealed and moisture proof. It contains control knobs for brightness and contrast, a focus lever (focuses objective lens), a power on-off switch, a focusable eyepiece with a security shutter eyeguard, standard pressure valve and a 7½ pound differential relief valve. An adjustable neck sling and two adjustable side hand slings are provided for handheld operation. On the AN/PAS-7A, the tripod mount is stowed in the transit case and replaced by the disposable lithium battery case (c below) which is attached to the viewer using the same mounting holes as the tripod mount. Thus, the AN/PAS-7A is a self-contained system. For test purposes or extended mission requirements, the disposable battery case can be removed and the tripod

mount reinstalled. A molded protective cap is provided to protect the IR window from dust, dirt or damage when the viewer is not in use. When the viewer is in use, the protective cap is attached to the viewer cover adjacent to the IR window by velcro strips on the cap and viewer cover to prevent the protective cap from flying around.

b. Case, Battery Power Supply CY–7537/PAS–7. Case, Battery Power Supply CY–7537/PAS–7 (rechargeable battery case) (fig. 1–4) is a sealed epoxy fiberglass case with a coated aluminum cover. The cover must be opened when charging the battery. The sealed case has a 3-pound differential pressure relief valve. The sealed case contains the 6-volt silver-zinc rechargeable battery that is

Figure 1–3. Viewer, Rear View.

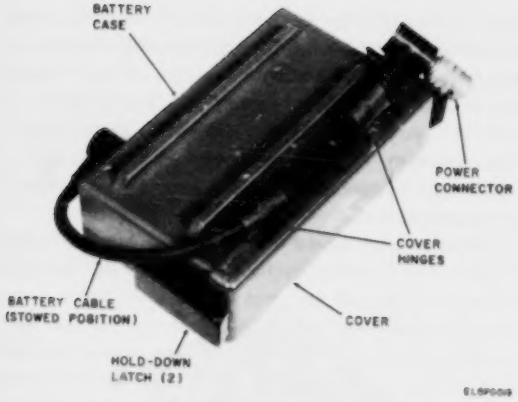

Figure 1–4.1. Disposable Battery Case.

held in place by cushioned spacers. The unit mounts to a standard military web gun belt through an adapter clip containing a standard gun belt clip. For AN/PAS–7A, the rechargeable battery can be used for test or extended operations while the disposable lithium battery (c below) can be used to fulfill most mission requirements.

c. *Case, Battery Power Supply CY–7888/PAS–7A.* Case, Battery Power Supply CY–7888/PAS–7A (disposable battery case) (fig. 1–4.1) is a molded plastic case with coated aluminum cover. The sealed case contains a voltage regulator printed wiring board with a mating connector for a 9–volt disposable dry lithium battery (BA–5599/U). The regulator regulates the voltage to a nominal 6 volts for the viewer on the AN/PAS -7A. The

cover is opened for installation or removal of the disposable lithium battery by disengaging a snapdown latch at each end of the case. A nylon battery removal strap is provided to aid in removing the lithium battery. A molded neoprene rubber interconnecting cable interconnects the battery and viewer. When not connected to the viewer the cable is stowed under the nylon hinges of the battery cover.

d. Charger, Battery PP–7311/PAS–7. Charger, Battery PP–7311/PAS–7 (charger) (fig. 1–5) is housed in an aluminum case sealed at one end with a latch down cover. Mounted internally are the electronic circuit card assemblies. A 10-foot cable with battery clips is provided for attaching to the external power source. The unit is fused and connects directly to the rechargeable battery through connector P1 and/or viewer through connector J1 for battery charging, system operation or simultaneous operation and charging.

e. Minor Components. The minor components of the AN/PAS–7A (fig. 1–6) are as follows:

(1) *Cable assembly, special purpose, electrical.* The cable assembly, special purpose, electrical (interconnecting cable) is 6 feet long with a female connector on one end and a male connector on the other. The interconnecting cable is used to connect the viewer directly to the rechargeable battery or charger or to the mated rechargeable battery and charger. The interconnecting cable is not used when operating the viewer with the disposable battery which has its own interconnecting cable.

(2) *Case, transit, viewer, infrared.* Transit case,

viewer, infrared (transit case) is a waterproof case used for transporting and/or storing AN/PAS-7A units and accessories. The top and bottom portions are clamped together by eight quick-disconnect, spring-loaded holddown latches, two on each side. An automatic pressure relief valve is provided on one side to keep internal and external pressure equalized. The interior of the case is paded with polyurethane cushions containing fitted cutouts for each of the units and accessories to protect and cushion them during transit.

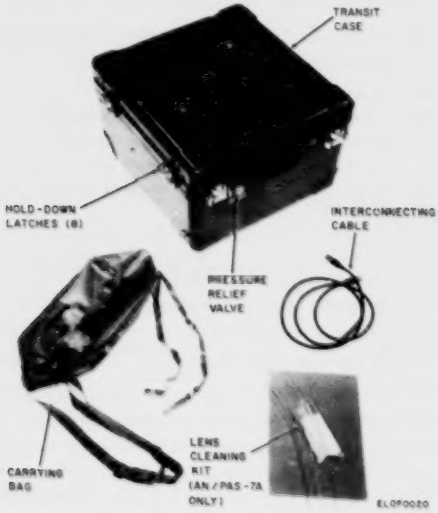

Figure 1-6. Minor Components.

(3) *Case, viewer, infrared.* Case, viewer, infrared (carrying bag) is a laminated nylon-vinyl fabric bag for carrying the viewer on field missions. The AN/PAS-7A carrying bag is slightly larger to provide room for the viewer with disposable battery case attached and provides a storage pocket for a spare disposable battery.

(4) *Lens cleaning kit (AN/PAS-7A only).* The lens cleaning kit consists of a press seal polyethylene bag containing six lint-free absorbent cotton pads and a squeeze bottle of lens cleaner. The lens cleaning kit is stowed in its own compartment in the transit case.

Page 1-11. Paragraph 1-8. Battery and Power Sources data is superseded as follows:

Rechargeable Battery:
- Type ..... silver zinc rechargeable
- Discharge rate ..... 1.6 amperes (typical)
- Output voltage ..... 6 volts (nominal)
- Capacity ..... 25 AH (ampere hours)

Disposable Battery (AN/PAS-7A only)
- Type ..... dry lithium disposable
- Discharge rate ..... 1.6 amperes (typical)
- Output voltage ..... 6 volts (nomimal)
- Capacity ..... 10 AH (ampere hours)

Power Sources
- Operation ..... (1) 6 volt internal rechargeable battery
  (2) 6 volt internal disposable battery (AN/PAS-7A only)
  (3) 12-32 volts dc external (using charger)
- Battery charging ..... 12-32 volts dc, 2.25 ampere

Page 1-12. Paragraph 1-8. At the end of the tabulated

data, dimension and weight data is superseded as follows:

Dimensions (in.)

	Width	Height	Depth
Viewer	10	5½	3½
Rechargeable battery	4 9/16	5¾	2 9/16
Disposable battery (AN/PAS-7A only)	6¼	3¾	2¼
Charger	3¼	8¾	2¼
Cable assembly		6 ft. long	

Weight (lb)

Viewer	6.50
Rechargeable battery	4.00
Disposable battery (AN/PAS-7A only)	1.75
Charger	2.5

Page 2-1. Paragraph 2-1. Add at the end of the last sentence: "Tripod mount is stowed in transit case when not in use in AN/PAS-7A systems.)"

Page 2-4. Paragraph 2-2 is superseded and paragraphs 2-1.1 and 2-1.2 are added after paragraph 2-1.

2-1.1. Mission Planning

Your supervisor will discuss with you or provide you with the mission plan. For normal mission requirements the AN/PAS-7A viewer with disposable battery (fig. 1-4.1) attached should be used (if available). The disposable battery provides power to operate the viewer approximately 4 hours under normal conditions. Spare disposable batteries can be taken on the mission if needed. For long surveillance type missions the rechargeable battery (fig. 1-4) can be used. The rechargeable battery can also be

used for normal missions if the disposable batteries are not available. If a tripod is available for long surveillance type missions, use a viewer with tripod mount installed on the viewer (fig. 1–2). The tripod mount is standard on AN/PAS–7A viewers and available to install when required on AN/PAS–7A viewers.

2–1.2. Preparations for Field Use

a. *General Instructions.*

(1) Press the pressure relief valve, then open the transit case by turning the eight holddown latches counterclockwise. Lay the transit case cover to one side.

(2) Check contents of the transit case and assure that all operating units are present (fig. 1–1 or 1–1.1 and/or Appendix B).

(3) Proceed to *b* below if the mission plan calls for using the disposable batter (AN/PAS–7A only). Omit *b* and proceed to *c* below if the mission plan calls for using the rechargeable battery.

NOTE

Stow all protective caps removed from connectors for operation in transit case. Replace caps on connectors before returning equipment to the transit case.

b. *Preparation for Field Use with Disposable Battery.*

WARNING

Lithium organic batteries or cells are used in this equipment. They are potentially hazardous if misused or tampered with before, during, or after discharge. The following precautions must

be strictly observed to prevent possible injury to personnel or equipment damage:

- **DO NOT* Heat, incinerate, crush, puncture, disassemble, or otherwise mutilate the batteries.
- **DO NOT* shortcircuit, recharge, or bypass internal fuse.
- **DO NOT* store in equipment during long period of non-use in excess of 30 days.
- **TURN OFF* the equipment immediately if you detect battery compartment becoming unduly hot, hear battery cells venting (hissing sound), or smell irritating sulphur dioxide gas. Remove and dispose of the battery only after it is cool (30-60 minutes).

(1) Remove the viewer (with disposable battery case attached), a disposable battery and the carrying bag from the transit case.

(2) Open the carrying bag and install the disposable battery into the pocket provided in the bag (fig. 2–1.1).

(3) If the mission plan calls for two batteries, remove a second battery from the transit case and install it in the disposable battery case on the viewer (para 2–2a). If only one battery is being taken on the mission, omit the step.

(4) Install the viewer with disposable battery case attached into the carrying bag. Close the carrying bag zipper.

(5) Place the carrying bag shoulder strap around your neck. Adjust the shoulder strap length until the bag reses in a comfortable position.

(6) To prevent the carrying bag from shifting around under conditions of foot mobility, attach the carrying bag belt clip to your belt and tie to your leg with the leg tie strings provided.

(7) When ready to operate the system, remove the viewer and disposable battery from the carrying bag and prepare for operation as described in paragraph 2-2a.

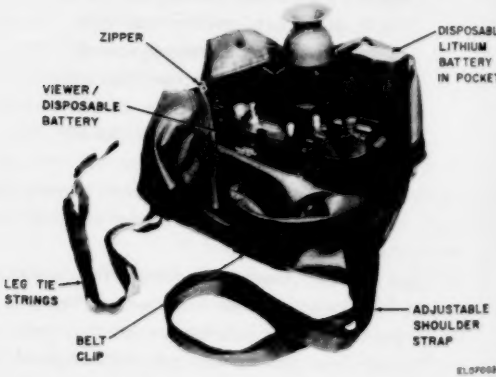

Figure 2-1.1. Viewer/Disposable Battery in Carrying Bag.

c. *Preparation for Field Use with Rechargeable Battery.*

CAUTION

Do not attach interconnecting cable to rechargeable battery until ready to operate the

system. With cable attached, the battery will discharge if the POWER switch is accidentally turned ON.

NOTE

Check charging log on end of rechargeable battery and make sure battery is fully charged before taking on a mission.

(1) Remove the viewer and the interconnecting cable from the transit case. Mate and lock the female connector end of the interconnecting cable to the viewer.

(2) Remove the carrying bag from the transit case. Open the carrying bag and install the viewer into the carrying bag and coil the interconnecting cable into the pocket provided (fig. 2–2). Close the carrying bag zipper.

(3) Place the carrying bag shoulder strap around your neck. Adjust the shoulder strap length until the carrying bag rests in a comfortable position.

(4) To prevent the carrying bag from shifting around under conditions of foot mobility, attach the carrying bag belt clip to your belt and tie to your leg with the leg tie strings provided.

(5) Remove the rechargeable battery from the transit case and check the charging log to make sure the battery is fully charged.

(6) Attach the rechargeable battery to your belt on the opposite side from the carrying bag.

(7) When ready to operate the system, remove the viewer and interconnecting cable from the carrying bag and prepare for operation as described in paragraph 2-2b below.

2-2. Operating Instructions

WARNING

Breakage of the cathode-ray tube (CRT) causes a high velocity scattering of glass fragments (implosion). To prevent CRT implosion, avoid rough handling or jarring of the instrument. Handling of the CRT shall be done only by qualified maintenance personnel using approved safety mask and gloves.

WARNING

The infrared window is coated with thorium flouride which contains a radioactive isotope, Thorium-232. The only potential hazard involves ingestion (swallowing or inhaling) of this coated material. This coating is electro-deposited in the silicone base so cleaning with alcohol will not damage it, but it will not be machined or worked on with abrasives of any sort. Dispose of broken windows in accordance with AR 755–15.

WARNING

Lithium organic batteries or cells are used in this equipment. They are potentially hazardous if misused or tampered with before, during, or after discharge. The following precautions must be strictly observed to prevent possible injury to personnel or equipment damage:

DO NOT Heat, incinerate, crush,

puncture, disassemble, or otherwise mutilate the batteries.

- *DO NOT* shortcircuit, recharge, or bypass internal fuse.
- *DO NOT* store in equipment during long period of non-use in excess of 30 days.
- *TURN OFF* the equipment immediately if you detect battery compartment becoming unduly hot, hear battery cells venting (hissing sound), or smell irritating sulphur dioxide gas. Remove and dispose of the battery only after it is cool (30-60 minutes).

CAUTION

If a malfunction occurs that causes the CRT display raster to collapse into a single horizontal or vertical line or an illuminated spot on the CRT screen, turn CONTRAST and BRIGHTNESS controls (fig. 2–1) fully counterclockwise to avoid burning a line or spot on the face of the CRT.

NOTES

Do not attempt to operate the viewer while looking through glass (such as vehicle windshield or windows). Glass is opaque to infrared radiation and will attenuate the IR signal rendering the viewer ineffective.

Stow all protective caps removed from connectors for operation in carrying bag or transit case. Replace caps on connectors before returning equipment to the transit case.

Perform *a* below and omit *b* if operating with a disposable battery. Omit *a* and perform *b* if operating with a rechargeable battery.

a. Preoperating Setup with Disposable Battery.

(1) Place the viewer neck sling around your neck (fig. 2–2.1) and adjust the length if required until the viewer rests in a comfortable position on your chest.

(2) Let the viewer hang on your chest by the neck strap with the disposable battery case up.

(3) Unlatch the two hold-down latches on the disposable battery case (one on each end) (fig. 1–4.1). Note that the battery cable is stowed under the nylon hinges of the battery case cover.

(4) Hold the viewer neck strap to one side and remove the battery cover from the battery case and fold back until it rests on top of the case. Remove the battery cable from under the nylon cover hinges.

(5) After making sure the battery removal strip (fig. 1–4.1) is out, insert the disposable lithium battery (BA–5599/U) into the case with the battery connector to the right (side towards the viewer FOCUS lever).

(6) Press the battery firmly into the case as far as it will go.

(7) Fold the battery removal strap over the battery

and close the battery case cover and latch the two hold-down latches.

(8) Make sure the viewer POWER switch is OFF (fig. 2–1) and then connect and lock the battery cable connector to connector 1J1 on the viewer front panel.

(9) Omit *b* below and proceed to *c* below for system turn-on and checkout.

Figure 2–2.1. Viewer in Operation Using Disposable Battery.

b. Preoperating Setup with Rechargeable Battery.

(1) Place the viewer neck sling around your neck (fig. 2–3) and adjust the length if required until the viewer rests in a comfortable position on your chest.

(2) Mate and lock the female connector end of the interconnecting cable to the viewer (para 2–1.2*c* step (1)).

(3) Mate and lock the male connector end of the interconnecting cable to the rechargeable battery.

(4) Attach the rechargeable battery to your belt or place on a nearby support if the viewer is being operated on a tripod (para 2–1.1).

Figure 2–3. Viewer in Operation Using Rechargeable Battery.

c. *System Turn-on and Checkout.*

CAUTION

Before turning POWER switch to ON, assure that BRIGHTNESS control is fully counterclockwise.

(1) Set the POWER switch ON. The faint ticking of the oscillating mirror should be heard immediately. Allow about 30 seconds after turn-on for the CRT heater to warm up.

(2) Remove the protective cap from the infrared (IR) window and attach to the velcro hook tape on the cover (fig. 1–3).

(3) Select a known warm target, such as a person, from 10 to 20 feet distance. Slide each hand under the hand slings on each end of the viewer. Adjust the hand slings for a comfortable fit. Hold the viewer in the palms of the hands so that the right thumb can move the tip of the FOCUS lever and the forefinger can rotate the BRIGHTNESS control. Similarly the left forefinger can rotate the CONTRAST control (fig. 2–2.1 or 2–3).

(4) Raise the viewer to eye level and press your eye firmly against the rubber eyeshield to open the security shutter.

(5) Aim the viewer at the target and adjust the BRIGHTNESS control with the right forefinger until the background scene is just visible. Refer to figures 2–4, 2–5 and 2–6 for typical displays.

(6) Adjust the eyepiece focus by rotating the eyepiece focus ring until the test raster (grid) definition is obtained. Once adjusted to your eye, the eyepiece focus

ring should require no further adjustment during operation.

(7) Rotate the CONTRAST control with the left forefinger until the desired contrast between target image and background is obtained on the display.

(8) With the right thumb, adjust the FOCUS lever for best focus of target image on the display.

(9) When a satisfactory display is obtained by observed a known target, proceed to *d* below.

d. General Operating Procedure. Once a satisfactory display is obtained (*c* above), operate the viewer as described below to search or scan the area of interest.

(1) Hold the viewer to the eye and search or scan the area of interest while adjusting the FOCUS control between NEAR (8M) and FAR (∞) depending upon distance to the area being scanned (fig. 2–2.1 or 2–3).

(2) Once a target of interest is observed, readjust BRIGHTNESS, CONTRAST, and FOCUS controls as required for a good target image on the display (fig. 2–4).

(3) Between search and scan periods, turn down the BRIGHTNESS control and let the viewer hang by the neck sling and rest on your chest. Adjust the neck sling length as required for a comfortable fit. For long periods between search and scan operation, turn the BRIGHTNESS control down and POWER switch to OFF to conserve the battery.

e. Shutdown Procedure.

(1) Set the POWER switch to OFF.

(2) Place the protective cap over the IR window.

(3) Disconnect the interconecting cable from the viewer (and rechargeable battery if applicable).

(4) If using a disposable battery, unlatch the two hold-down latches on the disposable battery case and open the cover. Pull the battery removal strap to loosen the battery and remove the battery from the case. Stow the battery interconnecting cable under the nylon cover hinges (fig. 1–4.1), close the cover and latch the hold-down latches.

(5) Stow the viewer and disposable battery (or interconnecting cable if applicable) in the carrying bag or stow the system in the transit case as applicable. Install any protective caps removed for operation on the connectors before stowing the equipment in the transit case. Return discharged disposable batteries to organizational maintenance for disposal per Army procedures.

Page 2–15. Paragraph 2–4*a*. Change paragraph as follows:

"*a. Rechargeable Battery Protection in Extreme Cold.* To extend rechargeable battery life when operating the viewer at temperatures below –20°F (–29°C), proceed as follows:"

Page 3–4. Table 3–1. Sequence Nos. 2 and 9. Change the title to "DISPOSABLE AND/OR RECHARGEABLE BATTERY"

Page 3–8. Table 3–2. Troubleshooting. Change the heading to "SYMPTOM".

Change the title of Symptom No. 1 as follows: "NO RASTER OR IMAGE ON VIEWER DISPLAY (OPERATING ON INTERNAL DISPOSABLE OR RECHARGEABLE BATTERY)".

Page 3–10. Paragraph 3–4*a*. Add new Paragrah 3–4*a* as follows:

a. Expendable Supplies and Materials. Refer to Appendix C, "Expendable Supplies and Materials List" for a list of supplies and materials required to perform the cleaning procedures of *b* through *e* following.

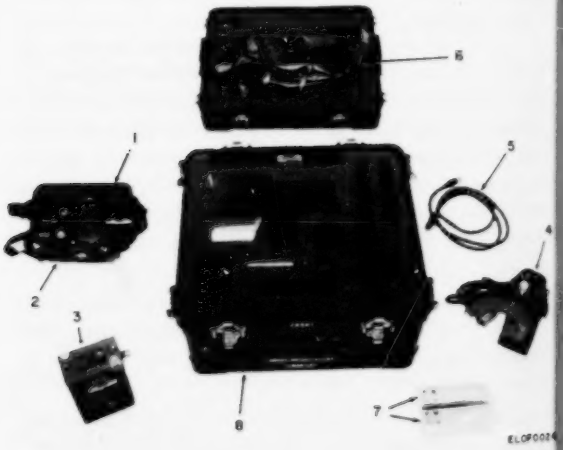

Figure B-2. Integral Components of the End Item.

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

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J. C. PENNINGTON
Major General, United States Army
The Adjutant General

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USAADS (2)
USAFAS (2)
USAARMS (2)
USAIS (2)
USAES (2)
USAICS (3)
MAAG (1)
USARMIS (1)
USAERDAA (1)
USAERDAW (1)
Ft Gordon (10)
Ft Carson (5)
Army Dep (1) except
SAAD (30)
TOAD (14)
SHAD (2)
Ft Gillem (10)
USA Dep (1)
Sig Sec USA Dep (1)
Ft Richardson (CERCOM Ofc) (2)
Units org under fol TOE:
(2 copies each unit)
29-207
29-610
(1 copy each unit)
7-15
29-15
29-25
29-35
29-134

NG: State AG (3): Units—None
USAR: None
For explanation of abbreviations used, see AR 310–50.

TECHNICAL MANUAL
No. 11-5855-246-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC *8 November 1976*

OPERATOR'S MANUAL

VIEWER, INFRARED AN/PAS-7

(NSN 5855-00-179-3169)

REPORTING OF ERRORS

You can help improve this manual by calling attention to errors and by recommending improvements and stating your reasons for the recommendations. Your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) should be mailed direct to Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

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CASE, VIEWER, INFRARED SU-85/PAS-7
VIEWER INFRARED SU-85/PAS-7
CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL USAECOM SM-D-774117-
CASE, BATTERY POWER POWER SUPPLY CY-7537/PAS-7
CHARGER, BATTERY PP-7311/PAS-7
CASE TRANSIT, VIEWER, INFRARED AN/PAS-7

Figure 1–1. Viewer, Infrared AN/PAS–7.

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1–1. Purpose and Scope

This manual is for use in operating and maintaining Viewer, Infrared AN/PAS–7 (fig. 1–1).

1–2. Indexes of Publications

a. DA Pam 310–4. Refer to the latest issue of DA Pam 310–4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310–7. Refer to DA Pam 310–7 to determine whether there are modification work or orders (MWO's) pertaining to the equipment.

1–3. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38–750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6

(Packaging Improvement Report) as prescribed in AR 700–58/NAVSUPINST 4030.29/AFR 71–13/MCO P4030.29A, and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP (SF 361) as prescribed in AR 55–38/NAVSUPINST 4610.33A/AFR 75–18/MCO P4610.19B and DSAR 4500.15.

1–4. Reporting Equipment Improvement Recommendations (EIR)

EIR will be prepared using DA Form 2407, Maintenance Request. Instructions for preparing EIR's are provided in TM 38–750, The Army Maintenance Management System. EIR's should be mailed direct to Commander, US Army Electronics Command, ATTN: DRSEL-MA-Q, Fort Monmouth, New Jersey 07703. A reply will be furnished direct to you.

1–5. Administrative Storage

Administrative storage of equipment issued to and used by Army activities shall be in accordance with TM 740–90–1.

1–6. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to

prevent enemy use shall be in accordance with TM 750–244–2.

Section II. DESCRIPTION AND DATA

1–7. Description of AN/PAS–7

Viewer, Infrared AN/PAS–7 (fig. 1–1) provides a means of nighttime observation by using only the infrared radiation emitted by the object observed. The equipment is used for observation and target selection. Although primarily a night vision device, the AN/PAS–7 may also be used for daylight operation. The AN/PAS–7 is comprised of Viewer, Infrared SU–85/PAS–7 (*a* below), Case, Battery Power Supply CY–7537/PAS–7 (*b* below), Charger, Battery PP–7311/PAS–7 (*c* below), and minor components (*d* below). If a more detailed description of any component of the AN/PAS–7 is needed, see your supervisor.

a. Viewer, Infrared SU–85/PAS–7. Viewer, Infrared SU–85/PAS–7 (viewer) (fig. 1–2 and 1–3), is the handheld portion of the AN/PAS–7. The housing is filled with dry nitrogen gas at 5 pounds atmospheric pressure. It contains control knobs for brightness and contrast, a focus lever (focuses objective lens),

a power on-off switch, a focusable eyepiece with a security shutter eye-guard; standard pressure valve and a 7½-pound differential pressure relief valve. An adjustable neck sling and two adjustable side hand slings are provided for handheld operation. A tripod mount is provided on the bottom of the viewer for mounting the viewer on a tripod for operation or test. A molded protective cap is provided to protect the IR window from dust, dirt or damage when the viewer is not in use.

b. Case, Battery Power Supply CY–7537/PAS–7. Case, Battery Power Supply CY–7537/PAS–7 (battery) (fig. 1–4) is contained in a sealed epoxy fiberglass case with a coated aluminum cover. The cover must be opened when charging the battery. The sealed case has a 3-pound differential pressure relief valve. The sealed case contains the 6-volt silver-zinc battery that is held in place by cushioned spacers. The unit mounts to a standard military web gun belt through an adapter clip containing a standard gun belt clip.

c. Charger, Battery PP–7311/PAS–7. Charger, Battery PP–7311/PAS–7 (charger) (fig. 1–5) is housed in an aluminum case sealed at one end with a latch down cover. Mounted internally are the electronic circuit card assem-

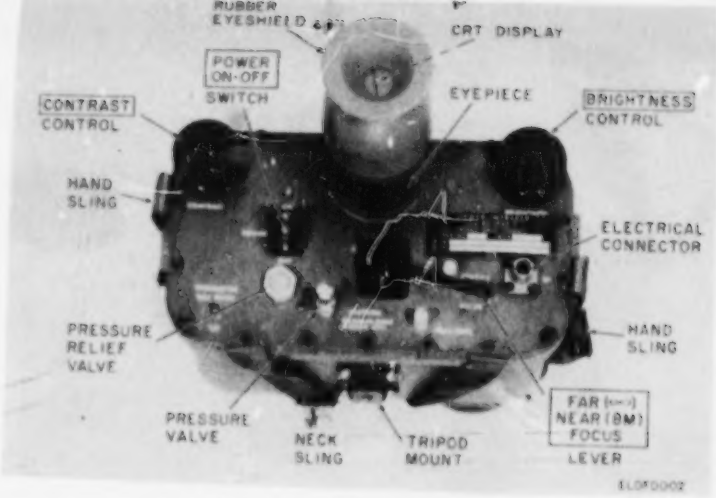


Figure 1–2. Viewer, front view.

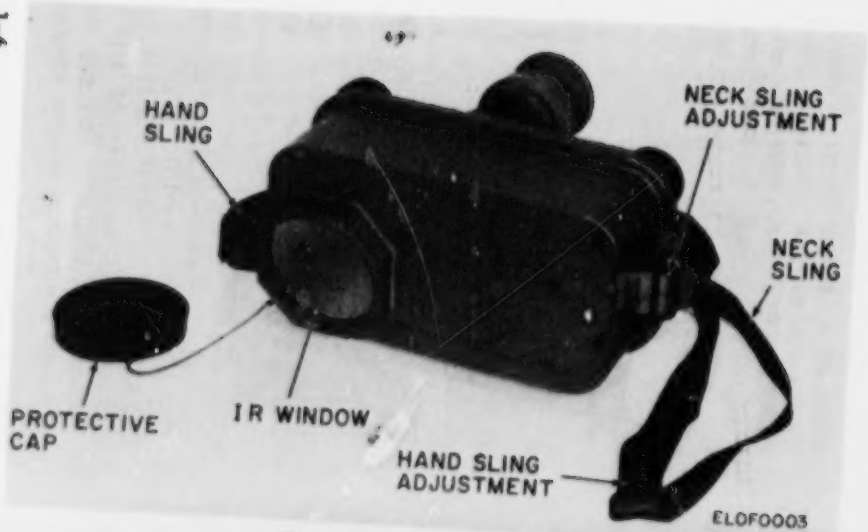


Figure 1-3. Viewer, rear view.

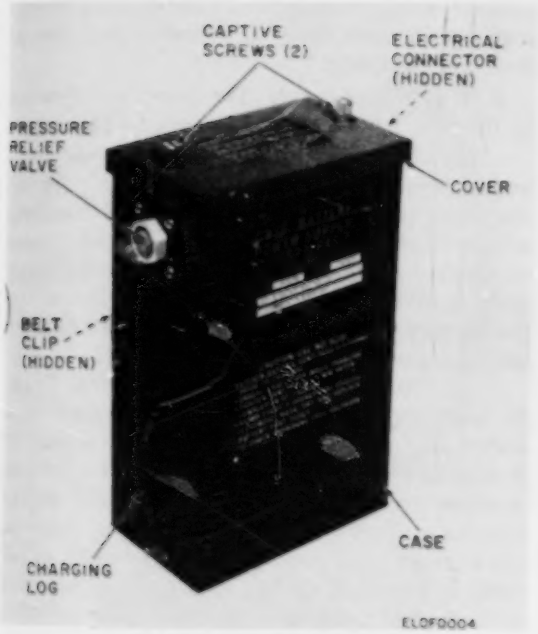


Figure 1–4. Battery.

blies. A 10-foot cable with battery clips is provided for attaching to the external power source. The unit is fused and connects directly to the battery through connector P1 and/or

viewer through connector J1 for battery charging, system operation, or simultaneous operation and charging.

d. Minor Components. The minor components of the AN/PAS-7 (fig. 1-6) are as follows:

(1) *Cable assembly, special purpose, electrical.* The cable assembly, special purpose, electrical (interconnecting cable) is 6 feet long with a female connector on one end and a male connector on the other. The interconnecting cable is used to connect the viewer directly to the battery or charger or to the mated battery and charger.

(2) *Case, transit, viewer, infrared.* Transit case, viewer, infrared (transit case) is a waterproof case used for transporting and/or storing the viewer units. The top and bottom portions are clamped together by eight quick-disconnect, sprnig-loaded holddown latches, two on each side. An automatic pressure relief valve is provided on one side to keep internal and external pressure equalized. The interior of the case is padded with polyurethane cushions containing fitted cutouts for each of the viewer units and accessories to protect and cushion them during transit.

(3) *Case, viewer, infrared.* Case, viewer, infrared (carrying bag) is a laminated nylon-

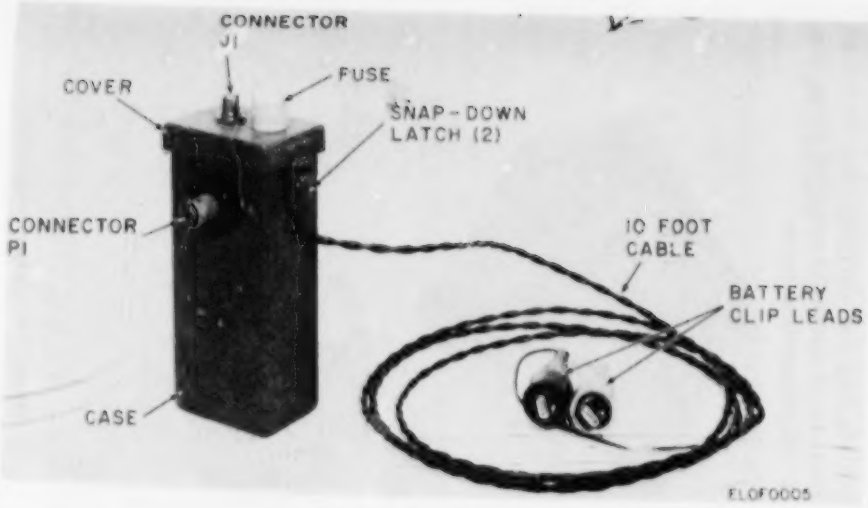


Figure 1–5. Charger.

vinyl fabric bag for carrying the viewer on field missions. A pocket is provided in the case for the interconnecting cable.

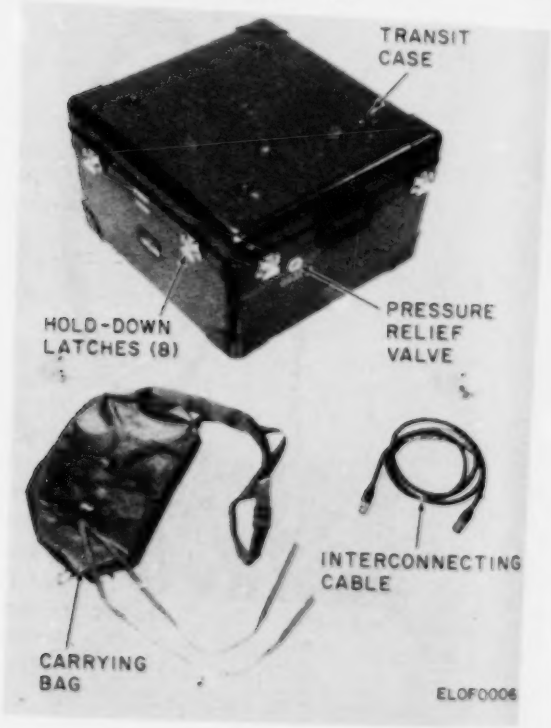


Figure 1–6. Minor components.

1–8. Tabulated Data

System:	
Field of view	6° vertical × 12° horizontal
Resolution	2 mr × 2 mr (milliradians)
Power	12 watts max.
Optics:	
Objective lens focusing range	8 meters to infinity (∞)
Eyepiece	±4 diopters
Detector:	
Type	Lead Selenide (PbSe) Linear Array
Number of elements	48
Electronics and display:	
Channels	48
Display	Cathode-ray tube (CRT)
Display Size	0.3 inch × 0.6 inch
Battery:	
Type	Silver-zinc rechargeable
Discharge rate	1.6 amperes (typical)
Output voltage (nominal)	6 volts
Capacity	25 AH (ampere hours)
Power Sources:	
Operation	6 volt internal battery or 12–32 volts dc external
Battery charging	12 to 32 volts dc, 2.25 ampere
Temperature range:	
Operating	−25°F to +120°F (−31.1°C to 48.9°C)

Storage and transporting ---------- −80°F to +155°F (−62°C to 67.8°C)

1–9. Items Comprising an Operable Viewer

The viewer (fig. 1–1) is comprised of the items listed in table 1–1.

1–10. Expendable Consumable Items

The items listed in table 1–2 are required for operation and are authorized to be requisitioned by CTA 50–970.

Table 1–1. Items Comprising an Operable Viewer

NSN	Item	Qty	Dimensions (in.)			Weight (lb)
			Width	Height	Depth	
5855–00–179–3169	Viewer, Infrared AN/PAS–7					
5855–01–020–3777	Viewer, Infrared SU–85/PAS–7	1	10	5½	3½	6.4
6130–01–020–3776	Case, Battery Power Supply CY–7537/ PAS–7 including:	1	4-9/16	5⅜	2-9/16	4.0
	Battery, Storage— Silver-Zinc, 6V USAECOM SM–D–774131–1	1				
6130–01–020–4495	Charger, Battery PP–7311/PAS–7	1	3¼	8¾	2¼	2.5
	Cable assembly, special purpose, electrical, P/N USAECOM SM–D–774117–1	1	6 ft long			

Table 1-2. Expendable Consumable Items

NSN	Item	Qty
8365-00-170-5060	Lint-free cloth	3
6640-00-507-6745	Lens tissue	1 pkg
6810-00-201-0906	Lens cleaner	3 oz bottle
7920-00-205-0565	Camel's hair brush	3

CHAPTER 2
OPERATING INSTRUCTIONS AND OPERATION UNDER UNUSUAL CONDITIONS

CAUTION

This equipment is a precision electro-optical instrument and must be handled carefully at all times.

NOTE

If equipment fails to operate, refer to troubleshooting procedures in chapter 3.

2–1. General

This section provides functional descriptions and instructions on the use of the viewer controls used by the operator during normal system operation. These controls (fig. 2–1) are located on the viewer front panel and are listed in table 2–1. The viewer is normally handheld during operation. However, a tripod mount (fig. 1–2) is provided for operation using a tripod for long surveillance type operation.

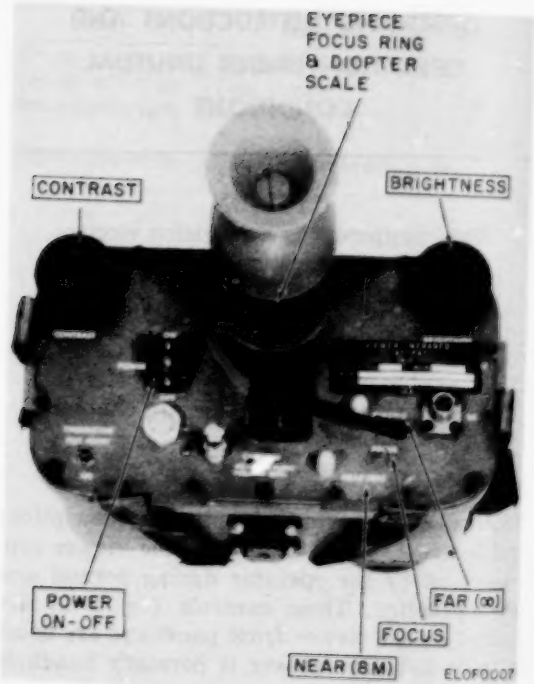


Figure 2–1. Viewer operating controls.

Table 2–1. Controls and Indicators

Controls and indicators	Function
POWER switch	Two-position toggle switch: *Pos* — *Function* ON — Applies power to viewer. OFF — Removes power from viewer.
BRIGHTNESS control	Rotates clockwise and counterclockwise to control brightness of observed image.
CONTRAST control	Rotates clockwise and counterclockwise to control contrast of target to background on cathode-ray tube display.
FOCUS lever	Moves up to FAR (∞) or down to NEAR (8M) to provide best objective lens focus on target being viewed. *Pos* — *Function* FAR (∞) — Viewer focused at infinity. NEAR (8M) — Viewer focused at less than 8 meters.

Table 2–1. Controls and Indicators—Continued

Controls and Indicators	Function
Eyepiece focus ring	Rotates clockwise and counterclockwise for best eye focus on CRT display.
Eyepiece diopter reference markings	Provides reference points for positioning eyepiece focusing after best initial focus has been determined.

2–2. Operating Instructions

CAUTION

If a malfunction occurs that causes the CRT display raster to collapse into a single horizontal or vertical line or an illuminated spot on the CRT screen, turn CONTRAST and BRIGHTNESS controls (fig. 2–1) fully counterclockwise to avoid burning a line or spot on the face of the CRT.

NOTES

Do not attempt to operate the viewer while looking through glass (such as vehicle windshield or windows). Glass is opaque to infrared radiation and will attenuate the IR signal rendering the viewer ineffective.

Check charging log on end of battery and make sure the battery is fully charged before each mission.

Stow all protective caps removed from connectors for operation in transit case. Replace caps on connectors before returning equipment to the transit case.

a. Preparation for Field Use.

(1) Press the pressure relief valve, then open the transit case by turning the eight hold-down latches counterclockwise. Lay the transit case cover to one side.

(2) Check contents of the transit case and assure that all operating units are present (fig. 1–1 and/or table 1–1).

CAUTION

Do not attach the interconnecting cable to the battery until ready to operate the system. With the cable attached, the battery will discharge if the POWER switch is accidentally turned on.

(3) Remove the viewer and the interconnecting cable from the transit case. Mate and

lock the female connector end of the interconnecting cable to the viewer.

(4) Remove the carrying bag from the transit case. Open the carrying bag (fig. 2-2) and install the viewer into the bag and coil the interconnecting cable into the pocket provided. Close the zipper.

(5) Place the carrying bag shoulder strap around your neck. Adjust the shoulder strap length until the carrying bag rests in a comfortable position.

(6) To prevent the carrying bag from shifting around under conditions of foot mobility, attach the carrying bag belt clip to your belt and tie to your leg with the leg tie strings provided.

(7) Remove the battery from the transit case. Attach the battery to your belt on the opposite side from the carrying bag.

(8) When ready to operate the system, remove the viewer and interconnecting cable from the carrying bag and prepare for operation as described in *b* below.

b. Preoperating Setup and Checkout.

(1) Place the viewer neck sling around your neck (fig. 2-3) and adjust the length if required until the viewer rests in a comfortable postion on your chest.

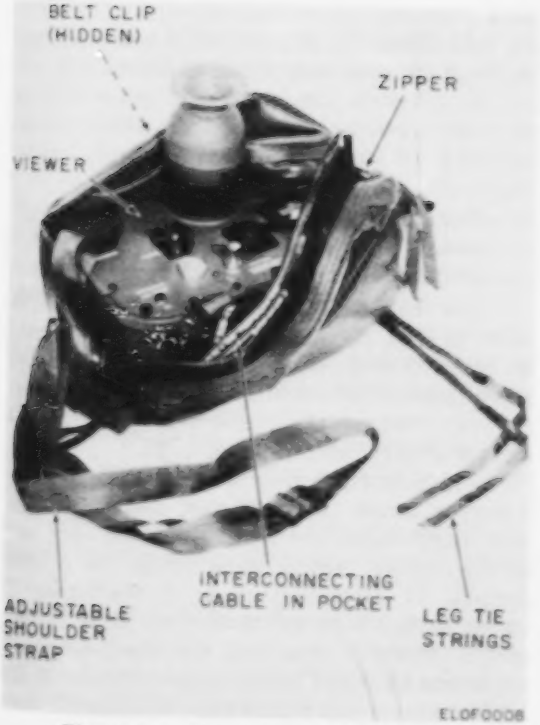


Figure 2–2. Viewer in carrying bag.

(2) Mate and lock the female connector end of the interconnecting cable to the viewer (*a*(3) above).

(3) Mate and lock the male connector end of the interconnecting cable to the battery.

(4) Attach the battery to your belt or place on a nearby support if the viewer is being operated on a tripod (*a*(7) above).

CAUTION

Before turning POWER switch to ON, assure that BRIGHTNESS control is fully counterclockwise.

(5) Set the POWER switch ON. The faint ticking of the oscillating mirror should be heard immediately. Allow about 30 seconds after turn-on for the CRT heater to warm up.

(6) Remove the protective cap from the infrared (IR) window (fig. 1–3).

(7) Select a known warm target, such as a person, from 10 to 20 feet distance. Slide each hand under the hand slings on each end of the viewer. Adjust hand slings for a comfortable fit. Hold the viewer in the palms of hands so that the right thumb can move the tip of the FOCUS lever and the forefinger can rotate the BRIGHTNESS control. Similarly the left forefinger can rotate the CONTRAST control (fig. 2–3).

(8) Raise the viewer to eye level and press your eye firmly against the rubber eyeshield to open the security shutter.

(9) Aim the viewer at the target and adjust the BRIGHTNESS control with the right forefinger until the background scene is just visible. Refer to figures 2–4, 2–5 and 2–6 for typical displays.

(10) Adjust the eyepiece focus by rotating the eyepiece focus ring until the best raster (grid) definition is obtained. Once adjusted to your eye, the eyepiece focus ring should require no further adjustment during operation.

(11) Rotate the CONTRAST control with the left forefinger until the desired contrast between target image and background is obtained on the display.

(12) With the right thumb, adjust the FOCUS lever for best focus of target image on the display.

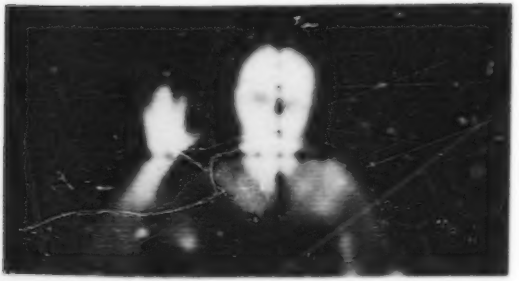
(13) When a satisfactory display is obtained by observing a known target, proceed to *c* below.

c. General Operating Procedure. Once a satisfactory display is obtained (*b* above), operate the viewer as described below to search or scan the area of interest.

(1) Hold the viewer to the eye and search

Figure 2–3. Viewer in operation.

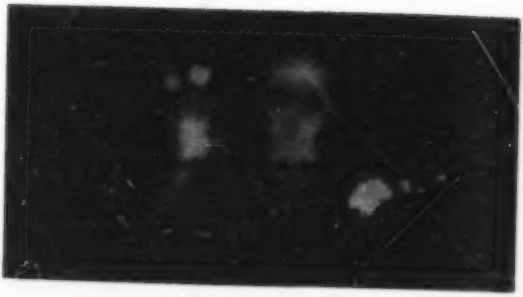
GOOD TARGET IMAGE



INCORRECT FOCUS

EL0F0010

Figure 2–1. Typical displays, good target, image and incorrect focus.



LOW BRIGHTNESS

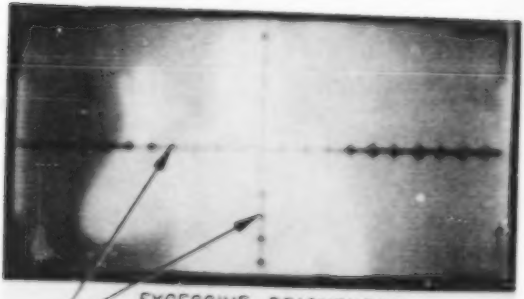
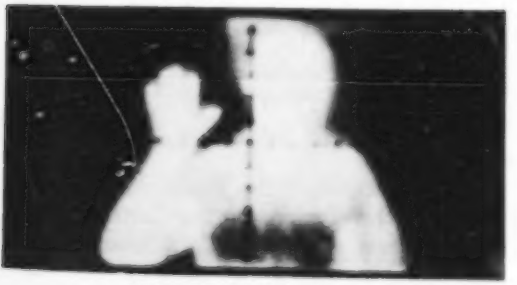


Figure 2-5. Typical displays, low and excessive brightness.

LOW CONTRAST



EXECESSIVE CONTRAST

ELOF0012

Figure 2–6. Typical displays, low and excessive contrast.

or scan the area of interest while adjusting the FOCUS control between NEAR (8M) and FAR (∞) depending upon distance to the area being scanned (fig. 2–3).

(2) Once a target of interest is observed, readjust BRIGHTNESS, CONTRAST, and FOCUS controls as required for a good target image on the display (fig. 2–4).

(3) Between search and scan periods, turn down the BRIGHTNESS control and let the viewer hang by the neck sling and rest on your chest. Adjust the neck-sling length as required for a comfortable fit.

d. Shutdown Procedure.

(1) Set the POWER switch to OFF.

(2) Place the protective cap over the IR window.

(3) Disconnect the interconnecting cable from both the viewer and the battery.

(4) Stow the viewer and interconnecting cable in the carrying bag or stow the system in the transit case as applicable. Install any protective caps removed for operation on the connectors before stowing equipment in transit case.

2–3. Operation Using an External Battery

The viewer may be operated with an external

12- to 32-volt vehicle battery as the primary dc power source by using the charger as an adapter as follows:

a. Connect the interconnecting cable between the viewer and charger connector J1 (fig. 2–7).

b. Connect the red battery clip of the charger to the positive (+) terminal and the black battery clip to the negative (—) terminal of the external battery.

c. Operate the system as described in paragraph 2–2.

2–4. Operation Under Unusual Conditions

a. Battery Protection in Extreme Cold. To extend battery life when operating the viewer at temperatures below —20 F° (—29° C), proceed as follows:

(1) If the viewer has been stored in cold temperatures, the battery should be warmed to room temperature. Do this by placing the equipment in a warm area for several hours before operation. Do not use an open flame to warm the battery.

(2) During cold weather operation, fasten the battery at the waist inside the outer clothing as close to the body as possible to keep the battery warm.

b. Lens Frosting. Frosting and fogging of

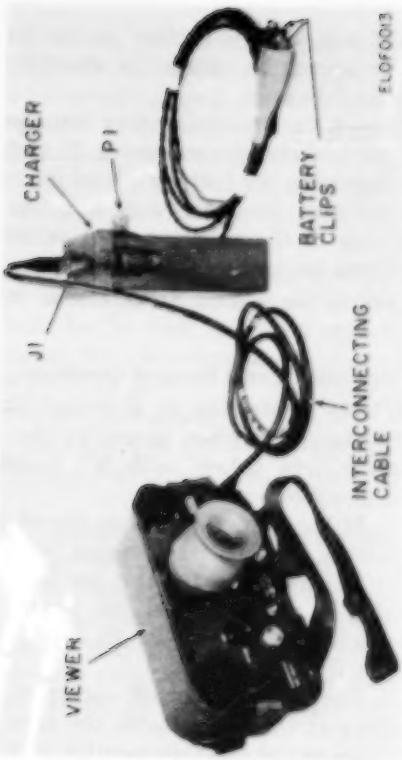


Figure 2–7. Unit interconnection for external battery operation.

the viewer IR window and the eyepiece lens may occur in cold weather and frequent cleaning may be necessary.

c. Dusty or Sandy Areas.

CAUTION

Operation in dusty or sandy areas can cause pitting and scratching of optical elements and damage to external mechanical components. Observe the precautions given in (1) through (4) below.

(1) Avoid pointing the viewer IR window into the wind unless necessary for operation.

(2) Cover as much of the viewer as possible to prevent damage to external surfaces.

(3) Keep the carrying bag closed and/or the protective cap installed on the IR window when the equipment is not in use.

(4) The IR window and eyepiece lens may require frequent cleaning. To remove dust and sediment from the lenses, use a lens brush. Finish cleaning the IR window and eyepiece lens with a clean lens tissue.

d. Rainy or Humid Conditions.

CAUTION

To prevent corrosion and deterioration, thoroughly dry all surfaces of the

viewer after exposure to rain or high humidity.

(1) If available, keep the equipment in the transit case when not in use.

(2) When in the field, keep the viewer in the carrying bag when not in actual operation. Keep the battery under rain gear if it is being worn on the operator's belt.

(3) Clean the IR window and eyepiece lens frequently with dry lens tissue. Keep the protective cap on the IR window as much as possible.

(4) Wipe the outside surfaces of the equipment with a dry, lint-free cloth.

e. Salt Water Areas.

CAUTION

To prevent corrosion and deterioration, thoroughly clean and dry all exterior surfaces of the viewer as soon after exposure to salt spray conditions as possible.

(1) If available, keep the equipment in the transit case when not in use.

(2) When in the field, keep the viewer in the carrying bag when not in actual operation. Keep the battery inside the outer clothing, if possible.

(3) Keep the protective cap on the IR window when the viewer is not in actual operation.

(4) Dampen a lens tissue with fresh water to remove salt water residue, then follow the procedure given in paragraph 3–4*b*.

(5) Wet a cloth with fresh water, and wipe all exterior surfaces free of salt water residue. Dry thoroughly with a dry, lint-free cloth.

CHAPTER 3
MAINTENANCE INSTRUCTIONS

3.1 Preventive Maintenance Checks and Services

Preventive maintenance checks and services (PMCS) is the systematic care, service, and inspection of equipment to be sure that the equipment is serviceable and to prevent the occurrence of trouble.

a. PMCS Periods. Preventive maintenance checks and services table 3–1 lists checks to be performed daily. If the viewer is not used daily, it should be checked and serviced immediately before going on a mission and as soon after completion of a mission as possible. Do not allow the viewer to go beyond one week without performing the daily preventive maintenance checks and services.

b. PMCS Reporting. If you cannot correct the defect, a higher category of maintenance is required. Record all checks in accordance with TM 38–750.

c. Table 3–1 Column Heading Explanation. The first column lists the interval and sequence that a particular check or service is required. This column is subdivided into three columns:

B, D, and A. The second column lists the item to be inspected and the procedure The third column (Work time (T/H)) lists the task hours (T/H) it should take to perform the check or service. This time is expressed in tenths of an hour.

CAUTION

If a malfunction occurs that causes the CRT display raster to collapse into a single horizontal or vertical line or an illuminated spot on the CRT screen, turn CONTRAST and BRIGHTNESS controls fully counterclockwise to avoid burning a line or spot in the face of the CRT.

3.2. General Troubleshooting Information

Troubleshooting of the viewer is based on reports of malfunctions that may occur during operation. The troubleshooting at operator category is limited to minor checks and corrective actions which do not require opening the viewer. No repairs or adjustments of the equipment by the operator is authorized. The majority of malfunctions that occur will require referring the equipment to higher category of maintenance. One of the prime troubleshooting responsibilities is to report accurately

Table 3-1. Daily Preventive Maintenance Checks and Services

B—Before Operation
Time Required—0.8

D—During Operation

A—After Operation
Time Required—0.7

Interval and sequence No.			ITEM TO BE INSPECTED PROCEDURE	Work time (T/H)
B	D	A		
1		8	VIEWER *a.* Check exterior surfaces for cleanliness and for dents, scratches, or other signs of damage. Clean as required (para 3-4*c*). *b.* Check IR window and eyepiece lens surface for cleanliness and for fractures, scratches, or other signs of damage. Clean as required (para 3-4*b*). *c.* Check rubber eyeshield for cleanliness and for proper operation of security shutter. Clean as required para 3-4*d*). *d.* Check connector for cleanliness and for bent or damaged pins or other signs of damage. Clean as required (para 3-4*c*). *e.* Check neck and hand sling fabric for cleanli-	0.2

Table 3–1. Daily Preventive Maintenance Checks and Services—Continued

Interval and sequence No.			ITEM TO BE INSPECTED PROCEDURE	Work time (T/H)
B	D	A		
			ness and for rips, tears, or other signs of damage. Clean as required (para 3–4*c*).	
2		9	BATTERY *a.* Check exterior surfaces for cleanliness and for dents, scratches, or other signs of damage. Clean as required (para 3–4*c*). *b.* Check connector for cleanliness and for bent or damaged pins or other signs of damage. Clean as required (para 3–4*e*).	0.1
3		10	CHARGER *a.* Check exterior surfaces for cleanliness and for dents, scratches, or other signs of damage. Clean as required (para 3–4*c*). *b.* Check connectors for cleanliness and for bent or damaged pins or other signs of damage. Clean as required (para 3–4*e*).	
4		11	INTERCONNECTING CABLE	0.1

			a. Check connectors and cable for cleanliness. Clean as required (para 3–4*e*). *b.* Check connectors for bent or damaged pins or other signs of damage. *c.* Check cable for cracks, breaks, or other signs of damage.	
5		12	CARRYING BAG *a.* Open bag and shake out any grit or dirt. Wipe interior and exterior with a clean, dry, lint-free cloth. If necessary, dampen cloth with clean water to remove grease and dirt. *b.* Check fabric for rips, tears, or other signs of damage. *c.* Check zipper for proper operation.	0.1
6		13	TRANSIT CASE *a.* Remove cover and all units and accessories from case. Turn case over and shake out any loose dirt or grit from fitted unit compartments. Check interior cushions for rips, tears, or other signs of damage. *b.* Check exterior surfaces for cleanliness and for dents, scratches, or other signs of damage. Clean as required (para 3–4*c*).	0.1

Table 3–1. Daily Preventive Maintenance Checks and Services—Continued

Interval and sequence No.			ITEM TO BE INSPECTED PROCEDURE	Work time (T/H)
B	D	A		
			c. Check holddown latches for proper operation and for bent clasps or other signs of damage.	
7			SYSTEM *a.* Before each operational mission, perform operational test as follows: (1) Interconnect viewer and battery (also charger and external battery if to be used). Turn POWER switch to ON. (2) Select target, such as a person, from 10 to 20 feet distance. (3) Aim viewer at target and operate controls to assure that CRT display target image is normal (para 2–3 and/or 2–4). *b.* During performance of *a* above, check to see that all controls are secure. Check mechanical action of POWER switch; CONTRAST, BRIGHTNESS, and FOCUS controls; and eyepiece focus ring for smooth operation, free from binding.	.01

the fault symptoms when the system is returned to organizational maintenance. This action will aid higher maintenance to quickly isolate the fault, make the necessary repairs, and return the equipment to operational readiness with a minimum of downtown.

3–3. Operator's Troubleshooting

Operator's troubleshooting is limited to the measures indicated in table 3–2 and accurately reporting all other malfunctional symptoms to organizational maintenance. When a malfunction occurs, check the symptoms with those listed in table 3–2. If the symptom is listed, perform the checks and corrective actions listed for that symptom. If the symptom is not listed or the listed corrective actions fail to correct the fault, refer the viewer and its fault symptoms to organizational maintenance.

3–4. Cleaning Procedures

CAUTION

Use lens tissue when cleaning lens or window surfaces. DO NOT use a cloth which may scratch lens surfaces and degrade system performance.

NOTE

When lens and window surfaces re-

Table 3-2. Troubleshooting

SYMPTON PROBABLE CAUSE CHECK AND CORRECTIVE MEASURES
1. NO RASTER OR IMAGE ON VIEWER DISPLAY (OPERATING ON INTERNAL BATTERY)
a. POWER switch inadvertently turned to OFF **Set POWER switch on ON.**
b. Cable connectors not properly seated. **Check to see that connectors are firmly seated and locked.**
c. Discharged or faulty battery. (1) **Replace battery.** (2) **If charger and an external 12- to 32-volt battery (such as a vehicle battery) is avialable, operate system on external battery.**
2. NO RASTER OR IMAGE ON VIEWER DISPLAY (OPERATING ON EXTERNAL BATTERY USING CHARGER)
a. Same as item 1 above. **Same as item 1 above.**
b. Charger battery clip leads on external battery not clipped on firmly or in wrong polarity.

Table 3–2. Troubleshooting—Continued

SYMPTON PROBABLE CAUSE CHECK AND CORRECTIVE MEASURES
Check battery clips for correct polarity (red clip—positive; black clip—negative) and for good connection to battery terminals.
c. Charger malfunction.
Remove charger from system and operate viewer on internal battery.
3. RASTER APPEARS SHRUNK (DOES NOT FILL DISPLAY RETICLE)
Same as item 1*c* or 2*c* above (depending upon power source being used).
Same as item 1c or 2c above (depending upon power source being used).
4. SCAN MIRROR NOT OSCILLATING (NO TICKING SOUND IN VIEWER)
Same as item 1*c* or 2*c* above (depending upon power source being used).
Same as item 1c or 2c above (depending upon power source being used).
5. RASTER BUT NO VIDEO IMAGE ON VIEWER DISPLAY
Protective cap not removed from IR window.
Remove protective cap.
6. POOR CONTRAST ON DISPLAY IMAGE
IR window fogged, wet, or covered with dust.
Clean or dry IR window (para 3–4*b*).

quire cleaning, clean exterior surfaces (*c* or *d* below) before cleaning lens surfaces.

a. List of Materials.

(1) Lint-free cloth (NSN 8365–00–170–5060, or equivalent).

(2) Lens tissue (NSN 6640–00–507–6745, or equivalent).

(3) Lens cleaner (NSN 6810–00–201–0906, or equivalent).

(4) Camel's-hair brush (NSN 7920–00–205–0565, or equivalent).

b. Lens and Window Surfaces.

(1) Carefully remove all loose dirt, dust, or foreign matter from the lens surface with a clean camel's-hair brush. (Do *not* use the same brush for cleaning exterior surfaces and for cleaning lens surfaces.)

(2) To remove stubborn dirt or smudges, use a lens tissue folded to form a swab and moistened with lens cleaner as directed in (3) and (4) below.

(3) Gently wipe the lens surface with the moistened lens tissue; use a circular motion. Start at the center of the surface and work towards the edge.

(4) Dry the cleaned lens surface with a

clean dry lens tissue; use the circular motion described in (3) above.

c. Exterior Surfaces.

(1) Remove all loose dirt, dust, and foreign matter from the exposed surfaces with a camel's-hair brush.

(2) Wipe all exposed surfaces with a clean, lint-free cloth.

(3) Remove stubborn or ground in dirt with a cloth dampened with clean fresh water or a mild detergent and water.

(4) Dry the surfaces thoroughly with a clean lint-free cloth.

d. Rubber Eyeshield.

(1) Remove dirt, dust, or foreign matter with a clean lint-free cloth.

(2) To remove stubborn or ground-in dirt, dampen the cloth with clean fresh water.

(3) Wipe dry using a clean, dry, lint-free cloth.

e. Connectors and Cables.

(1) Remove all loose dirt, dust, or foreign matter from the exterior surfaces and connector contacts with a camel's-hair brush.

(2) Use a clean lint-free cloth slightly dampened with clean fresh water to remove stubborn dirt from the connector or cable surfaces.

best copy available

(3) Allow to air-dry or wipe dry with a clean, dry, lint-free cloth. Be sure all connector pins are dry before they are used.

APPENDIX A

REFERENCES

DA Pam 310–4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8 and 9), Supply Bulletins and Lubrication Orders.
DA Pam 310–7	US Army Index of Modification Work Orders.
CTA 50–970	Expendable Items: (Except: Medical, Class V, Repair Parts and Heraldic Items).
TM 38–750	The Army Maintenance Management System (TAMMS).
TM 740–90–1	Administrative Storage of Equipment.
TM 750 244–2	Destruction of US Army Electronics Command Technical Equipment to Prevent Enemy Use.

APPENDIX B
BASIC ISSUE ITEMS LIST AND ITEMS TROOP INSTALLED OR AUTHORIZED LIST

Section I. INTRODUCTION

B–1. Scope

This appendix lists basic issue items and items troop installed or authorized required by the crew/operator for operation and maintenance of the AN/PAS–7.

B–2. General

This basic Issue Items, Items Troop Installed or Authorized list is divided into the following sections:

a. Section II. Basic Issue Items List. A list in alphabetical sequence of items which are furnished with, and which must be turned in with, the end item.

b. Section III. Items Troop Installed or Authorized List. Not applicable.

B–3. Explanation of Columns

The following provides an explanation of columns in the tabular lists of section II.

a. Illustration. This column is divided as follows:

(1) *Figure number.* Indicates the figure number of the illustration on which the item is shown.

(2) *Item number.* Indicates the item number used to reference the item on the illustration.

b. National Stock Number. Indicates National stock number assigned to the item and will be used for requisitioning purposes.

c. Description. Indicates the Federal item name and, if required, a minimum description to identify the item. The last line for each item in the BILL indicates the part number with the FSCM in parentheses.

d. Unit of Measure (U/M). Not applicable.

e. Quantity Furnished with Equipment. Indicates the quantity of the basic issue item furnished with the equipment.

e. Quantity Authorized. Not applicable.

B–4. Special Information

Not applicable.

B–5. Abbreviations

Not applicable.

Figure B–1. Basic issue items.

SECTION II. BASIC ISSUE ITEMS LIST

(1) ILLUSTRATION (A) FIG. NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER & FSCM / USABLE ON CODE	(4) QTY FURN WITH EQUIP
B-1	1		CASE, TRANSIT, VIEWER, INFRARED, SM-D-777439-1 (80063)	1
B-1	2		CASE, INSPECTOR AND VIEWER, SM-D-777433-1 (80063)	1

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LOGCOMD (3)
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Corps (2)
Instl (2) except
Ft. Gillem (10)
Ft Gordon (10)
Ft Huachuca (10)
Ft Carson (5)
SAAD (30)
LBAD (14)

TOAD (14)
SHAD (3)
HISA (Ft Monmouth) (33)
Ft. Richardson (ECOM Ofc) (2)
Svc Colleges (1)
USASESS (5)
USAICS (3)
USAADS (2)
USAFAS (2)
USAARMS (2)
USAIS (2)
USAES (2)
MAAG (1)
USARMIS (1)
USAERDAA (1)
USAERDAW (1)
Sig FLDMS (1)
Units org under fol TOE:
7–15 (1)
29–15 (1)
29–25 (1)
29–35 (1)
29–134 (1)

ARNG & USAR: None.

For explanation of abbreviations used, see AR 310–50.

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